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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,101	03/30/2004	Hari Nadathur Seshadri	145204/YOD GERD:0090	5551

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Tait R. Swanson
Fletcher Yoder
P.O. Box 692289
Houston, TX 77269-2289

EXAMINER	
HOANG, TU BA	

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/813,101	SESHADRI ET AL.	
	Examiner	Art Unit	
	Tu Ba Hoang	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03/30/04* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment/Amendments

Applicant's arguments/amendments filed April 21, 2006 have been fully considered but they are not persuasive as for the following reason:

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

Claims 24-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al (DE 4021997 A1). Suzuki et al shows a temperature measuring system comprising means for materially stabilizing (i.e., a heat resistant metal tube 105 or 111 shown in Figures 2 and 7-8) a thermistor 101 comprising Chromia (or chromium oxide, i.e., Cr_2O_3) and at least one stabilizing material (i.e., titanium oxide, manganese oxide and silicon oxide, see translated abstract), and means or terminal wires 107 for electrically contacting the thermistor 101 (as shown in Figure 2).

Claim 23 is further rejected under 35 U.S.C. 102(b) as being clearly anticipated by Soda et al (US 3,958,209) cited by the Applicants. Soda et al shows a temperature measuring system 3 comprising means for materially stabilizing a thermistor 1 comprising Chromia (or chromium oxide, i.e., Cr_2O_3) and at least one stabilizing material (i.e., aluminum oxide, manganese oxide and/or titanium oxide, see abstract), and means or terminal wires 2 for electrically contacting the thermistor 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9, 11-18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (US 4,058,787) in view of Kuzuoka et al (US 2002/0020949). Ichikawa et al discloses substantially all features of the claimed invention including a temperature measuring system which comprises a heat source or an engine, a component or catalytic converter coupled to the engine and at least one

thermistor 1 coupled to the component or catalytic converter and adapted to monitor temperature of the exhaust gases or of the catalytic converter (column 1, lines 1-5, i.e., the temperature sensor using a thermistor for measuring the temperature of exhaust gases of an automotive engine and column 2, lines 8-12, i.e. for giving an alarm in the case the temperature within a catalytic converter exceeds the preset value, it is inherently shown that the catalytic converter must be connected to the engine), and a plurality of electrical contacts 3a,3b, wherein there is also a measuring device or temperature sensor (as a whole shown in Figure 1) coupled to the thermistor 1 (i.e. using or including the thermistor 1) and thermistor can be substantially stable at a temperature up to about 1000 degrees Celsius (column 1, line 34, i.e., withstand a very high temperature such as 1,100°C and column 2, line 68).

Ichikawa et al fails to show the thermistor comprises a core-shell micro structure having a shell disposed about a core, wherein the core comprises Cr_2O_3 and the shell comprises a rare earth element compound which can be selected from a group consisting of Pr, Nd, Sm, Eu, Gd, Tb, Dy, Er, Yb, Ce, and Y or can be formed by at least one compound selected from a group consisting of the rare earth compound -oxide, -CrO_3, -nitrate, -carbonate, -hydroxide, alkooxides, carboxylates, a mixture of M_2O_3 and Cr_2O_3 .

The use of rare earth compounds in thermistor body of temperature sensing device having Cr_2O_3 to improve its resistivity temperature coefficient in high temperature environment of about 1000 °C or higher (such as in automobile exhaust gas) as well as to provide the stable properties is old and well known in the art, as

evidence, Kuzuoka et al discloses the use of a thermistor element 1 for detecting a high temperature of an automobile exhaust gas (page 1, paragraph [0004]), wherein the thermistor element comprises a core-shell micro structure (i.e., mixed sintered body of composition $(MM')O_3$ and a metallic compound AO_3) having a shell of rare earth element compound $(MM')O_3$ disposed about a core or metallic compound AO_3 including Cr_2O_3 (page 2, paragraph [0013], at line 3, i.e. ,Cr and Figures 3-7), wherein the rare earth element compound can be selected from a group (i.e., M) consisting of Y, Ce, Pr, Nd, Sm, Eu, Gd, Dy, Yb and etc. as set forth on page 1, paragraph [0012], or from group (i.e., M') consisting of Cr (i.e., CrO_3), a mixture including Cr_2O_3 as set forth on page 1, paragraph [0012], line 5 (i.e., meet the limitations of claims 9 and 19). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize in Ichikawa et al the thermistor made of ceramic compositions having such oxide mixtures including at least one of the rare earth compounds (such as Y, paragraph [0004]) taught by Kuzuoka et al set forth above in order to improve and provide stable properties in a high temperature range (page 1, paragraph [0004]).

Regarding claim 8, since the shell has the same composition taught by Kzuoka et al and to be used in the same environment, it is clear that the shell is also "adapted" to reduce chromia loss due to volatilizing or volatilization.

Claims 10, 19-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (US 4,058,787) in view of Kuzuoka et al (US 2002/0020949) as applied to claims 1-9, 11-18 and 21-22 and further in view of Alles et al (US 5,297,438). Ichikawa et al in view of Kuzuoka et al disclose substantially all

features of the claimed invention except for the rare earth element compound comprises at least one compound comprising an aliovalent dopant selected from a group consisting of Ca, **Ba**, Sr, Mg, Si, and Ti (as recited in claims 9 and 20) or selected from a group consisting of the rare earth compound -**oxide**, - CrO_3, -nitrate, -**carbonate**, -**hydroxide**, alkooxides, carboxylates, a mixture of M_2O_3 and Cr_2O_3 (i.e., as recited in claim 19). Alles et al discloses the use of alivalent dopant (column 3, lines 1-3) selected from the group consisting of the rare earth element (column 3, lines 22-23) or at least **barium** titanate (i.e., barium or **Ba** in the titanate, column 3, lines 46-49) or in the combined form including metal carbonate, metal oxide, metal hydroxide (column 3, lines 36-41) in the compound or composition for the thermistor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such aliovalent dopant taught by Alles et al in order to exhibit a substantially greater change in the resistivity under stress (column 1, lines 39-40).

Regarding claim 22, since the claimed invention as a whole is directed to a temperature measuring system, the temperature measuring variability of the thermistor can be determined by different ways or steps depend upon the time and temperature. Such steps or process are not germane to the patentability of the resulting device unless characteristics or properties of the device are clearly recited. The Examiner' s position is that such step or process intended for claim 22 has not been given any patentable weight to the claimed device. However, Alles et al also discloses there are changes in temperatures during baking the composition which may occur over different periods or times, for example to raise the temperature from 100 degrees Celsius to 700

degrees Celsius per hour where the heating rate can be lower than about 12 degrees Celsius per hour or to 1300 degrees Celsius from about 4 to about 200 hours (column 10, lines 57-68). Even thought Alles et al does not indicate the exact "temperature measuring variability of less than plus or minus 5 degrees Celsius after about 1000 hours at about 1000 degrees Celsius" as recited in claim 22, in light of Alles et al teaching, it would have been within the purview of obviousness to one having ordinary skill in the art to achieve of such temperature measuring variability depend upon the desired and required heating rate during experiment purposes.

REMARK

In response to applicant's argument with respect to the rejection of claim 23 over Suzuki et al (DE 4021997) or Soda et al (US 3,958,209) that as claim 23 included means-plus-function language as set forth in 35 USC 112, paragraph 6 and the examiner may not disregard the structure disclosed in the specification corresponding to such language when rendering the patentability determination and proper interpretation of the claim must be performed with reference to the structure provided in the specification. Particularly, with regard to the "means for materially stabilizing a thermistor comprising Cr_2O_3 and at least one stabilizing material" and in applicants' specification, a shell 62 is disclosed for performing the recited function, i.e. para [0024], Fig.5 and para [0025], Fig.6 (emphasis added). The examiner position is that after further review and reconsider the entire specification, no where to find such at least means for **materially stabilizing** a thermistor **comprising Cr_2O_3** and such at least one

stabilizing material. While the specification discloses the use of such Cr_2O_3, there is no indication whatsoever the Cr_2O_3 is for materially stabilizing the thermistor or is a stabilizing material or is for performing the stabilizing function. As applicants are positively involved the USC 35, paragraph 6 but the specification as its original filing does not provide any support for such means-lus-function languages. Applicant is requested to point out the exact "means-plus-languages" in the manner as it was intended to be involved since paragraphs [0024] to [0025] and the rest of the entire specification does not include of such. Based on the applicant's present disclosure, Suzuki et al is clearly anticipated all of such means-plus-function recitations or languages of claim 23.

With respect to applicants' argument to the rejection of claims 1-9, 11-18, and 21 over Ichikawa et al in view of Kuzuoka et al, that in Kuzuoka et al, there is no teaching of a core-shell microstructure having a shell disposed about a core as recited in claims 1 and 11 (emphasis added). The Examiner's position is that since there is no specifics, diameters, or thickness of the core and shell are specified or provided, any particles would have a core covered by a shell or exterior coating within the mixture and Kazuoka et al does disclose such mixed sintered body of composition $(MM')O_3$ and a metallic compound AO_3) having a shell of rare earth element compound $(MM')O_3$ disposed about a core or metallic compound AO_3 including Cr_2O_3 as set forth on page 2, paragraph [0013], at line 3, i.e. ,Cr and Figures 3-7, wherein the rare earth element compound can be selected from a group (i.e., M) consisting of Y, Ce, Pr, Nd, Sm, Eu, Gd, Dy, Yb and

etc. as set forth on page 1, paragraph [0012], or from group (i.e., M') consisting of Cr (i.e., CrO_3), a mixture including Cr_2O_3 as set forth on page 1, paragraph [0012], line 5.

As noted, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981) and in this case, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu Ba Hoang whose telephone number is (571) 272-4780. The examiner can normally be reached on Mon-Thu from 8:00AM to 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tu Ba Hoang
Primary Examiner
Art Unit 2832

July 10, 2006